PROGRAM SCHEDULE (Continued)

Session 3B		**Friday 3:15—5:45pm Room: Jefferson West** *chairman:* J. Woods, *co-chairman:* B. Burroughs (filtering)
3:15	S. Silberstein	Proposed Standard Laboratory Practice for Assessing the Performance of Sorption Gas-Phas Air-Cleaning Equipment
3:30	J. Rodberg, J. Miller, G. Keller, J. Woods	A Novel Technique to Permanently Remove Indoor Air Pollutants
3:45	R. Shaughnessy L. Oatman	The Use of Ozone Generators for the Control of Indoor Air Contaminants in an Occupied Environment
4:00	V. Brown, D. Crump, T. Dearling, G. Gardiner, M. Gavin	The Effectiveness of an Air Purifier for Reducing Concentrations of Volatile Organic Compounds in Indoor Air Following Painting
4:15	M. Hujanen, O. Seppanen, P. Pasanen	Odor Emission from the Used Filters of Air Handling Units
4:30	D. Ensor, J. Hanley, L. Sparks	Particle-Size-Dependent Efficiency of Air Cleaners
4:45	M. Shumate, J. Wilhelm	Air Filtration Media-Evaluations of Fiber Shedding Characteristics under Laboratory Conditions and in Commercial Installations
5:00	F. Offermann, III, S. Loiselle, R. Sextro	Performance Comparisons of Six Different Air Cleaners Installed in a Residential Forced Air Ventilation System
5:15	A. Hedge, M. Martin, J. McCarthy	Breathing-Zone Filtration Effects on Indoor Air Quality and Sick Building Syndrome Complaints
5:30	R. Raber, H. Yu	Ventilation and Filtration Requirements Based on Fanger's "Perceived Good Air Quality" an Standard 62-1989
SESSION 3C		**Friday 3:15-5:45pm Room: Monroe East** *chairman:* G. Yuill, *co-chairman:* J. Cone (operation & maintenance)
3:15	T. Wang, L. Hawkins	The Office Environment and the Sick Building Syndrome
3:30	C. Downing, C. Bayer	Operation & Maintenance for Quality Indoor Air
3:45	J. Ventresca	Operation and Maintenance for Indoor Air Quality: Implications from Energy Simulations o Increased Ventilation
4:00	T. Laatikainen, P. Pasanen, L. Korhonen, A. Nevalainen, J. Ruuskanen	Methods of Evaluating Dust Accumulation in Ventilation Ducts
4:15	P. Pasanen, M. Hujanen, P. Kalliokoski, A. Pasanen, A. Nevalainen, J. Ruuskanen	Criteria for Changing Ventilation Filters

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PROGRAM SCHEDULE (Concluded)

4:30	G. Briggs, M. Rodgers, J. Sharpe	Building Owner's In-House Response to Indoor Air Quality Problems-Four Case Studies.
4:45	U. Norlen, H. Hogberg, K. Andersson	Survey of the Indoor Climate in Swedish Housing Stock
5:00	P. Drake, P. Mill, M. Demeter	Implications of User-Based Environmental Control Systems: Three Case Studies
5:15	(U. Norlen), H. Stymne, C. Boman, P. Norberg, H. Mellander, G. Stridh	Methods for Indoor Climate Measurements in Large Scale Surveys

Saturday, September 7 — **Ventilation for Healthy Buildings**

8:00	Overview Lecture: Ventilation Criteria, Measurement and Effectiveness E. Skaaret (Jefferson Ballroom)
8:30	Symposium: Different Approaches to Ventilating Healthy Buildings J. Talbott, chairman (Jefferson Ballroom) 1. Ventilation to Handle Pollution from Building and Occupants P. Fanger 2. Air Exchange Effectiveness of Conventional Technology Ventilation for Offices W. Fisk 3. Classified Indoor Climate Quality—A Way to a New Indoor Climate Technology U. Regnholt 4. ASHRAE Standard 62-1989: An Environmental Health Perspective K. Teichman
10:00-12:00 noon	Exhibits Open for Manufacturers' Products and Services
12:00-1:00pm	Luncheon (Lincoln and Monroe West)
1:00-3:00pm	Concurrent Workshops (3): Performance Guidelines for Controlling IAQ by Ventilation 1. E. Mayer, facilitator (Jefferson East) 2. K. Teichman, facilitator (Jefferson West) 3. G. Yuill, facilitator (Monroe East)
3:00-5:00pm	Exhibits Open for Manufacturers' Products and Services
5:00-6:00pm	Exhibitors' Reception

Sunday, September 8 — **Productivity and Economic Benefits of Healthy Buildings**

9:00	Overview Lecture: Quantifying Costs and Benefits of Healthy Buildings D. Mudarri (Jefferson Ballroom)
9:45	Overview Lecture: Overcoming Barriers to Productivity in Healthy Buildings D. Wyon (Jefferson Ballroom)
10:30-10:45am	Break
10:45-11:45am	Workshop Summaries (Jefferson Ballroom)
11:45	Concluding Remarks (Jefferson Ballroom) K. Teichman, ASHRAE Environmental Health Committee Chairman J. Hill, CIB

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MANUFACTURERS' PRODUCT AND SERVICE SESSION
Saturday, September 7

Schedule of Events

10:00 am-12:00 noon	Exhibits Open
12:00 noon-1:00 pm	Lunch
3:00 pm-5:00 pm	Exhibits Open
5:00 pm-6:00 pm	Exhibitors' Reception

Air Quality Sciences, Inc. **Booth 19** *1331 Capital Circle, Suite D, Marietta, GA 30067* *(404) 933-063*

Product Description: AQS provides dynamic environmental chamber testing of interior furnishings, finishes and othe construction materials to provide chemical emission data required to predict the indoor air quality effects of the product evaluated. AQS also provides on-site air measurements of indoor air contaminants. Using sophisticated computer model ling in conjunction with product testing and on-site measurements, AQS can predict the IAQ effects of ventilation strategie and construction practices.

American Air Filter/ SnyderGeneral Corp. **Booth 47** *215 Central Avenue, P.O. Box 35690, Louisville, KY 40232* *(502) 637-034*

Product Description: A variety of air filter products will be displayed by SnyderGeneral Corporation, manufacturer an marketer of American Air Filter products.

Berner Air Products, Inc. **Booth 35** *P.O. Box 5410, New Castle, PA 16105* *(412) 658-355*

Product Description: The Berner AQ PLUS+ is an air-to-air exchanger with a recirculation filtration system. An easy to insta retrofit combines energy efficient ventilation, filtration and humidity control in one appliance.

Bruel & Kjaer Instruments, Inc. **Booth 13** *185 Forest Street, Marlboro, MA 01752* *(508) 481-700*

Product Description: To diagnose a "sick" office or building, you need a very special instrument. An instrument capable c sampling the air, analyzing the complex mix of gases in a typical indoor environment, and delivering a comprehensive repo of the precise concentrations of all gaseous air quality indicators.

Bruel & Kjaer will introduce the Type 1302 Multi-gas Monitor which operates continuously and unattended and can delive simultaneous measurements of carbon dioxide, carbon monoxide, vinyl chloride, volatile organic compounds, formaldehyd or other combinations of up to five gases and water vapor that can be related to indoor air quality problems. Automat temperature, humidity and cross-gas compensation assure accuracy. An on-board computer provides powerful data loggin capability, and interfaces with personal computers, printers and graphic plotters to deliver the reports you need. In combinatic with Type 1303 sampler/doser and Type 7620 applications software, the 1302 can even serve as part of the only commercial available ventilation efficiency measurement system that uses tracer gas techniques.

Climatec Company **Booth 5** *7640 Edgecomb Drive, Liverpool, NY 13088* *(315) 457-59*

Product Description: The Airscreen

The Airscreen is the non-ionizing, glass fiber polarized media filter. It operates on the principle that dielectric material, suc as fiberglass, becomes polarized when exposed to electrostatic fields, resulting in positive and negative charges being induce on the surfaces of the dielectric material. Particles of any size entering the electrostatic field between the grounded scree also become polarized. This dual polarization of both fibers and particles causes the particles to be attracted by and to adhe to the fibers.

Cool-Fog Systems, Inc. **Booth 14** *26 Pearl Street, Norwalk, CT 06850* *(203) 847-05*

Product Description: Precise, effective and clean ultrasonic fog generation for humidification and control of ozone and VO related IAQ problems.

Dust Free, Inc. **Booth 18** *Box 519, Royce City, TX 75089* *(214) 635-95*

Product Description: Dust Free™, Inc. specializes in manufacturing air filtration equipment which is designed to bene individuals who require a clean environment. Current product offerings include: Dust Fighter™ Electrostatic Series—sel powered filters which provide up to 95% peak dust weight arrestance with minimal air flow resistance for filters of this typ Room Air Purifiers—three portable models are offered. Each model features high efficiency particulate removal with optio for large quantities of adsorbent media with output ranges from 80 to 300 CFM maximum output; Commercial Air Cleaners- The DF 1500 is a totally enclosed air handling system designed for ceiling or wall mount. This unit can produce up to 15 CFM of filtered air. Particulates are effectively removed by a self-powered electrostatic prefilter and a 95% dust spot efficien V-bag filter. For odor and chemical control eight to ten pounds of adsorbent media may be added. The DF 2000 utilizes modul components which flush mount into a T-bar grid ceiling. Three different configurations permit flexibility to meet almo any space limitations or air cleaning requirements. Media filtration includes a pleated 95% dust spot efficiency filter and ov twelve pounds of adsorbent for odor and chemical control. Clean air output can be up to 1500 CFM depending on co figuration.

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Enviracaire-ENV Services **Booth 44** *747 Bowman Avenue, Hagerstown, MD 21740* *(301) 797-9700*

Product Description: Enviracaire will display a commercial air purifier housing 32 lbs. of charcoal and a HEPA filter which purifies 1090 cubic feet of air per minute. This system is designed to alleviate "sick building syndrome" without the use of additional fresh air. Literature on air quality sampling services provided by ENV Services, Inc. Dr. Ed Montz, Ph.D., an authority on air quality sampling, will be present for questions and answers.

FARR Company **Booth 6** *2221 Park Place, El Segunde, CA90245* *(213) 536-6326*

G-CONTROLS, INC. **Booth 22** *10734 Lake City Way, N.E., Seattle, WA 98125* *(206) 363-4863*

Product Description: Air Quality Sensor

The purpose of the sensor is to enable a ventilation plant to use less fresh air when it is not required, thereby saving heating or cooling energy. The sensor is sensitive to a large variety of gases and not any one in particular, therefore, the sensor would give the same reading if there were 10 gases present at 10 ppm each, or if there was 1 gas present at 100 ppm concentration. The sensor is only concerned with the total level of impurity and not how it is made up.

Our room and duct air quality sensors operate on the principle of the change in resistance, and thereby output voltage, of a hot-wire element as a result of gases oxidizing on the element. The greater the level of oxidation taking place then the poorer the air quality and the higher the output voltage.

The Hartford Steam Boiler Inspection and Insurance Company **Booth 30** *One State Street, Hartford, CT 06102* *(800) 243-0090*

Interface Research Corporation **Booth 4** *100 Chastain Center Boulevard, Suite 165, Kennesaw, GA 30144* *(404) 421-9555*

Product Description: Envirosense™—Interior Products with INTERSEPT®

INTERSEPT is formulated into low V.O.C. interior products including carpets, paints, coatings, adhesives, panel fabrics, wall coverings, upholstery materials, epoxy systems, ceiling tiles, plastics and other finishes to inhibit bacteria and fungi from breeding on virtually all interior surfaces. Microbial contamination can lead to odors, product degradation and allergic reactions. INTERSEPT contains no arsenic. No tin, lead, mercury, copper, zinc or other heavy metals. No halogens. No fluorine, chlorine, bromine or iodine. INTERSEPT is non-phenolic, contains no formaldehyde and is not volatile.

Envirosense™ is the application, design and specification of INTERSEPT® and its superior properties to an ever growing array of products, surfaces and coatings. The Envirosense Consortium consists of architects, engineers, environmental and maintenance firms, building owners, facility managers and product manufacturers who offer a "solutions approach" helping to enhance Indoor Air Quality.

Modus Instruments, Inc. **Booth 20** *10 Bearfoot Road, Northboro, MA 01532* *(508) 393-8991*

Product Description: Modus Instruments, Inc. will display their complete line of differential pressure transmitters, switches, controllers, digital manometers, and related products.

Modus products measure, indicate, and control pressures from .001 inches of water column to 30 PSI.

North American Research Corporation **Booth 12** *P.O. Box 1318, Lewisville, TX 75067* *(800) 527-7520*

Product Description: ALATHENE,™ a non-water soluble material that, when applied to a surface, kills various microorganisms and renders the surface incapable of supporting biological growth. ALATHENE™ is now available to the HVAC industry and should be considered by design engineers for application to newly installed equipment and to existing installations during routine maintenance. The use of ALATHENE™ will significantly improve indoor air quality while reducing operating costs by keeping heat transfer surfaces free of efficiency-robbing fungal growth. A simple solution to a common problem. ALATHENE™ can be used on any non-porus surface where mold and fungus growth create a problem. It is ideally suited for application to cooling coils in air handling and fan and coil units. It is also effective in condensate pans, associated air conditioning duct work, and evaporator pans in refrigeration systems.

Pacer Industries, Inc. **Booth 21** *1450 First Avenue, Chippewa Falls, WI 54729* *(715) 723-1141*

Product Description: Precise Measurement Means More Knowledge!

Pacer Industries' booth will feature innovations in air velocity, humidity, and temperature measuring instrumentation. Combining multiple readings from a single unit with data logging capabilities through a printer, recorder, or P.C. Included are a variety of instruments that measure amps, volts, ohms, watts, RPM's, light, insulation, sound, and wind. New for 1991 are temperature and relative humidity transmitters with a multiple range of outputs and optional RS232 capabilities. Also, a membrane switchable Hygro-thermometer with display hold and two separate analog outputs.

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MANUFACTURERS' PRODUCT AND SERVICE SESSION
(Concluded)

Pathogen Control Associates, Inc. **Booth 2** PathCon Laboratories, *270 Scientific Drive, Suite 3, Norcross, GA 30092* *(404) 446-0540*

Product Description: PathCon Laboratories provides laboratory services for Legionella analysis, microbiological support to consultants, interpretation of findings, and qualitative and quantitative results. It also addresses protocol development, fungal and bacterial analysis of air and other services related to microbiological evaluation of human health complaints associated with buildings.

Polytron Filters **Booth 1** *P.O. Box 5881, Beaumont, TX 77726* *(409) 838-0540; (800) 842-7655*

Product Description: The POLYTRON Permanent Air Cleaners are designed to act as two filters in one; a pre-filter to attract large particles, and a main filter to collect and hold remaining particles. The design provides more efficient filtering and greater dustholding capacity without excessive restriction of air flow. Plus, the POLYTRON filters are highly electrostatic, trapping and holding dust and other irritants. The POLYTRON Permanent Air Cleaners have the best ratings in the industry. In tests performed at Air Filter Testing Laboratories in Crestwood, KY, ASHRAE Standard test 52-76, the POLYTRON products proved efficiency in all three categories that affect total system performance and filtration efficiency-arrestance, initial resistance and dust-holding capacity.

Purafil, Inc. **Booth 11** *2654 Weaver Way Doraville, GA 30340* *(404) 662-8543*

Product Description: The Exhaust Air Recirculation Cost/Benefit Analysis (EARC) was developed by Purafil, Inc., a manufacturer of commercial, gas-phase cleansing and recirculating normally exhausted air. The analysis is based on a statistically sound method of accurately projecting the cost of heating and cooling outdoor air in a given location. Depending upon the building's geographical location, its use characteristics, the type HVAC equipment used, the general system layout, and the cost of energy, cost savings will be projected.

Union Carbide Chemicals and Plastics Company, Inc. **Booth 43** *39 Old Ridgebury Road, Section J-3, Danbury, CT 06817* *(203) 794-3400*

Product Description: Union Carbide is introducing a new proprietary air cleaning technology known as the UCAIR™ Air Cleaning System. This system, for which patents have been applied for, is designed to effectively destroy and significantly reduce volatile organic compounds, microbiologicals, carbon monoxide, and ozone in indoor environments. The UCAIR™ system incorporates a proprietary catalysis technology developed by Union Carbide to control indoor air pollutants.

The UCAIR™ Air Cleaning System is not a simple filtration system or an electrostatic precipitator. Its advantage over activated carbon systems is its higher efficiency rates over longer periods of time. In addition, the UCAIR™ system, unlike activated carbon systems, does not preferentially adsorb certain contaminants and expel other contaminants. The exhibit will show how the technology works, display a small model of what the device looks like, offer literature, and make available several technical support personnel who have been critical to the research and development efforts of this technology over the past several years.

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